What is claimed is:

1. An organometallic precursor represented by the following Formula 1, for forming a metal film or pattern:

Formula 1

$L_nM_mL'_pX_q$

{wherein,

M is a transition metal; L' is a neutral ligand;

X is an anion that may coordinate with the transition metal;

m is an integer of 1 to 10, provided that when m is two or more, each M may or may not be the same as each other;

p is an integer of 0 to 40, and q is an integer of 0 to 10, provided that when p or q is two or higher, L's or Xs are independently identical or different with one another, and p and q are not 0 at the same time; and

L is a hydrazine compound coordinating the transition metal, represented by the following Formula 2:

Formula 2

$R_1R_2NNR_3R_4$

[wherein,

R_1, R_2, R_3 and R_4 are independently hydrogen; alkyl or aryl of 1 to 20 carbon atoms having substitution groups; or $R_5\overset{O}{\overset{\|}{C}}-$, provided that the substitution groups are selected from the group consisting of halogen groups including F, Cl, Br or I, amine groups, hydroxyl groups, -SH(sulfhydril) groups, cyano groups,

sulphonic acid groups (SO_3H), R_6S-, R_6O- (R_6 is an alkyl or aryl group containing 1 to 20 carbons), $R_5\overset{O}{\overset{\|}{C}}-$, and nitrile groups, and R_5 is R', R'_2N, or R'O (R' is hydrogen, or an alkyl or aryl group containing 1 to 20 carbons)]; and

n is an integer of 1 to 40, provided that when n is two or more, Ls are independently identical or different with one another}.

2. The organometallic precursor as set forth in Claim 1, wherein M is a metal selected from the group consisting of Ag, Au, Cu, Pd, Pt, Os, Rh, Co, Ni, Cd, Ir, and Fe; L' is a ligand bonded to the metal, containing donor atoms including N, P, As, O, S, Se, or Te and having 20 or less carbons; and X is one or more anion that can coordinate a metal atom, the anion being selected from the group consisting of OH^-, CN^-, NO_2^-, NO_3^-, halide (F^-, Cl^-, Br^-, or I^-), trifluoroacetate, isothiocyanate, tetraalkylborate (BR_4^-, R is Me, Et or Ph), tetrahaloborate (BX_4^-, X is F or Br), hexafluoro phosphate (PF_6^-), triflate ($CF_3SO_3^-$), tosylate (Ts^-), sulphate (SO_4^{2-}), carbonate (CO_3^{2-}), acetylacetonate, trifluoroantimonate (SbF_6^-), and an anion containing a hydrazine group.

3. The organometallic precursor as set forth in claim 1, wherein L' is selected from the group consisting of amines; alcohols; phosphines, phosphites, or phosphine oxides; arsines; thiols; carbonyl compounds; alkenes; alkynes; and arenes.

4. The organometallic precursor as set forth in Claim 1 or 2, wherein the organometallic precursor represented by the Formula 1 is $Ag(CF_3COO)CH_3CONHNH_2$, $Ag(CF_3COO)$ t-butylcarbazate, $Ag(CF_3COO)$ benzoichydrazide, $Ag(BF_4)CH_3CONHNH_2$, $Ag(SbF_6)CH_3CONHNH_2$, $Ag(SO_3CF_3)CH_3CONHNH_2$, or $Ag(NO_3)CH_3CONHNH_2$.

5. A composition for forming a metal film or pattern, which comprises a hydrazine compound represented by the following Formula 2 and an organometallic compound represented by the following Formula 3:

Formula 2

$R_1R_2NNR_3R_4$

{wherein,

R_1, R_2, R_3 and R_4 are independently hydrogen; alkyl or aryl of 1 to 20 carbon atoms having substitution groups; or $R_5\overset{O}{\overset{\|}{C}}-$, provided that the substitution groups are selected from the group consisting of halogen groups including F, Cl, Br or I, amine groups, hydroxyl groups, -SH(sulfhydryl) groups, cyano groups, sulphonic acid groups (SO_3H), R_6S-, R_6O- (R_6 is an alkyl or aryl group containing 1 to 20 carbons), $R_5\overset{O}{\overset{\|}{C}}-$, and nitrile groups, and R_5 is R', R'$_2$N, or R'O (R' is hydrogen, or an alkyl or aryl group containing 1 to 20 carbons)}; and,

Formula 3

$M_mL'_pX_q$

{wherein,

M is a transition metal; L' is a neutral ligand;

X is an anion that can coordinate the transition metal;

m is an integer of one to ten, provided that when m is two or more, each M may or may not be same as each other; and

p is an integer of 0 to 40, and q is an integer of 0 to 10, provided that when p or q is two or higher, L's or Xs are independently identical or different with one another, and p and q are not 0 at the same time}.

6. A method of forming a metal film or pattern using a solution of the organometallic precursor of claim 1 or the composition of claim 5 with heat treatment.

7. The method as set forth in claim 6, wherein forming the metal film or pattern is performed by i) producing a pattern through a microcontact printing, a micro molding in capillary (MIMIC), an imprinting, an ink-jet printing, or a silk-screen, and ii) heating the pattern.

8. The method as set forth in claim 6, wherein the solution of organometallic precursor of claim 1 or the composition of claim 5 is prepared by dissolving the organometallic precursor or the composition in a solvent selected from the group consisting of nitriles including acetonitrile, propionitrile, pentanenitrile, hexanenitrile, heptanenitrile, and isobutylnitrile; aliphatic hydrocarbons including hexane, heptane, octane, and dodecane; aromatic hydrocarbons including anisole, mesitylene, and xylene; ketones including methyl

isobutyl ketone, 1-methyl-2-pyrrolidinone, cyclohexanone, and acetone; ethers including tetrahydrofuran, diisobutyl ether, and isopropyl ether; acetates including ethyl acetate, butyl acetate, and propylene glycol methyl ether acetate; alcohols including isopropyl alcohol, butyl alcohol, hexyl alcohol, and octyl alcohol; inorganic solvents; and a mixture thereof.

9. The method as set forth in claim 6, wherein the method comprises the steps of i) dissolving the organometallic precursor of claim 1 or the composition of claim 5 in a first solvent to produce a solution and coating the solution on a substrate; ii) partially heat-treating the solution coated on the substrate at 400℃ or lower; and iii) developing a heat-treated coating with a solvent to obtain the pattern.

10. The method as set forth in claim 9, wherein ii) the partial heat-treatment is conducted by using a laser beam or an electronic beam.

11. The method as set forth in claim 6, wherein the method comprises i) preparing a mold or a stamp with a fine pattern and ii) injecting or coating the organometallic precursor of claim 1 or the composition of claim 5 into the mold or on the stamp, transferring the organometallic precursor or composition onto a predetermined substrate, and heat-treating the transferred organometallic precursor or composition.